6. A loudspeaker as described in claim 1, having the first end of the oscillating member mounted between a first pair of pivoting points. A second pair of pivoting points is set in the area of the center of percussion of the entire oscillating member about the axis of the first pair of pivoting points.
The voice coil is attached in the area of the center of mass of the entire oscillating member.

7. A loudspeaker, as described in claim 1, having the first end of the oscillating member mounted between a first pair of pivoting points and the voice coil in the center of mass of the entire oscillating member. The second pair of pivoting points is installed in the area of the center of percussion of part of the oscillating member between the center of mass of the entire oscillating member and the second end of the oscillating member, about the axis of the center of mass of the entire oscillating member.

8. A loudspeaker, as described in claim 1, having a first pair of pivoting points around the center of percussion of the quarter of the entire oscillating member containing the first end of the entire oscillating member about the center of mass of the half of the entire oscillating member containing the first end of the entire oscillating member. The second pair of pivoting points is installed in the area of the center of percussion of the half of the entire oscillating member containing the second end of the entire oscillating member about the center of mass of the entire oscillating member. The voice coil is placed in the area of the center of mass of the entire oscillating member.

9. A loudspeaker, as described in claim 1, having the voice coil in the center of mass of the entire oscillating member. The first pair of pivoting points is installed in the area of a first center of percussion of the part of the oscillating member between the first end of the oscillating member and the center of mass of the entire oscillating member, about the axis of the center of mass of the entire oscillating member. The second pair of pivoting points is installed in the area of a second center of percussion of the part of the oscillating member between the center of mass of the entire oscillating member and the second end of the oscillating member, about the center of mass of the entire oscillating member.

10. A loudspeaker, as described in claim 9, having the first pair of pivoting points shifted from the first center of percussion into the center of mass of part of the oscillating member from the first end of the oscillating member to the first center of percussion and the second pair of pivoting points shifted from the second center of percussion into the center of mass of part of the oscillating member between the second end of the oscillating member to the second center of percussion.

11. A loudspeaker, as described in claim 4, having no pivoting points in the area of the center of mass.

12. A loudspeaker, as described in claim 5, having no pivoting points in the area of the center of mass.

13. A loudspeaker, as described in claims 2,3,4,5,11 and 12, having instead of unidirectional flexing elements, in their location, a pair of pivoting points installed as in claim1.

14. A loudspeaker, as described in claims 6,7,9 and 10, having the free overhanging ends of the oscillating member replaced with dynamic counterbalancing weights.

15. A loudspeaker, as described in claims 1,2,3,4,5,6,7,8,9,10,11,12,13 and 14, having at least one cavity in the oscillating member in order to control the average density and improve sound absorption. The cavity is air filled.

16. A loudspeaker, as described in claim 15, having the cavity filled with a gas, other than air.

17. A loudspeaker, as described in claims 1,2,3,4,5,6,7,8,9,10,11,12,13,14, 15 and 16, having at least two voice coils attached in a row along the width of the oscillating member in order to increase the width of the assembly without compromising the very concept of the present invention.

18. A loudspeaker, described in claims 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 and 17, set in a horizontal position, having the electromagnetic driver or drivers facing upwards, being able to hold a heat transferring fluid in the cavity of the permanent magnet assembly. The permanent magnet assembly or assemblies, if needed can be surrounded by stationary heat sink structures or even a fan forced cooling system.

19. A loudspeaker, as described in claims 1,2,3,4,5,6,7,8,9 and 10, having all pivoting points replaced with flexible elements.

Abstract

A loudspeaker, having a not necessarily rectangular, planar or constant thickness oscillating member, made of relatively thick, low density, stiff, acoustic insulating material, in an elongated form, surrounded by a solid frame, supporting the oscillating member in a minimum number of pivots or flexible elements, placed in areas of points of specific dynamic balance, like one end, center of mass and center of percussion about a certain axis of the oscillating member. The oscillating member is set in vibration by a permanent magnet driver having the voice coil attached to the oscillating member and the permanent magnet assembly supported by a bridge mounted across the frame.
In an alternative preferred embodiment the oscillating member is built to incorporate at least one cavity filled with air or a gas different from air. In an alternative preferred embodiment the horizontally placed oscillating member has at least one voice coil immersed in a heat transferring fluid introduced in the cavity of the electromagnetic driver.